UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

JULIE DELANEY and WILLIAM P. DELANEY Plaintiffs, v. ELI LILLY AND COMPANY, Defendant.	Civil Action No. 05-CV-10241 (MLW) Next Action: Motions Hearing on April 19, 2007 at 1:30 p.m.

PLAINTIFFS' MOTION FOR LEAVE TO FILE THE ADDITIONAL AFFIDAVIT OF JOHN J. HEFFERREN IN OPPOSITION TO DEFENDANT'S MOTION FOR SUMMARY JUDGMENT

COME NOW Plaintiffs Julie Delaney and William P. Delaney (together "Plaintiffs"), through counsel, and move this Court for leave to file the additional affidavit of John J. Hefferren, Ph.D. in support of Plaintiff's Opposition to Defendant's Motion for Summary Judgment. As grounds therefore, Plaintiffs state:

1. In its Motion for Summary Judgment, Defendant Eli Lilly and Company ("Defendant") relies on an article written by John J. Hefferren, Ph.D. for the proposition that other pharmaceutical companies may have made a white, cross-scored pill. See Def's Motion for Sum. Judg., pg. 4 and Exhibit 11.

2. Plaintiffs herewith tender an affidavit from the same Dr. Hefferren in order to show that the white, cross-scored pill manufactured by Eli Lilly and Company was unique and distinctive and not manufactured by any other company. See Affidavit of John J. Hefferren, Ph.D., attached as Appendix 1.

3. Affidavits may be served in opposition to summary judgment "prior to the day of hearing." Fed. R. Civ. P. 56(c). Such affidavits are timely filed if provided the day before the

hearing, even if not at the same time as the opposition. See Christian Methodist Episcopal Church v. Montgomery, C/A No. 4:04-CV-22322, 2007 U.S. Dist. LEXIS 5133 at *17 and n. 6 (D.S.C. Jan. 18, 2007); c.f. Friends of the Wild Swan, Inc. v. United States E.P.A., 130 F. Supp. 2d 1184, 1197 (D. Mont. 1999) (denying a motion to strike affidavits filed months after the summary judgment briefs and days before oral argument as Rule 56(c) allows filing prior to the hearing).

4. The hearing regarding the instant Motion for Summary Judgment is scheduled for April 19, 2007 at 1:30 p.m.

WHEREFORE, Plaintiffs Julie Delaney and William P. Delaney respectfully request that the Court grant leave them to file the Affidavit of John J. Hefferren, Ph.D. with Exhibits A through D, all attached hereto as Appendix 1, in support of their Opposition to Defendant's Motion for Summary Judgment. For the Court's convenience, a proposed order is attached hereto as Appendix 2.

Respectfully submitted,

/s/ Erica Tennyson
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Erica Tennyson (BBO# 660707)
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/s/ Aaron M. Levine
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Attorneys for Plaintiffs

Dated: April 4, 2007

CERTIFICATE OF SERVICE

I, Erica Tennyson, hereby certify that this Plaintiffs' Motion for Leave to File the Additional Affidavit of John J. Hefferren in Opposition to Defendant's Motion for Summary Judgment, filed through the ECF system will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF) and paper copies will be sent to those indicated as non registered participants on April 4, 2007.

/s/ Erica Tennyson
Erica Tennyson (BBO# 660707)

LOCAL RULE 7.1(A)(2) CERTIFICATION

I hereby certify that, pursuant to L.R., D. Mass. 7.1(A)(2), I have been informed that counsel for both parties conferred and attempted in good faith to resolve or narrow the issues. On April 2, 2007, counsel for Defendant Eli Lilly and Company refused to consent to this Motion for Leave.

/s/ Erica Tennyson
Erica Tennyson (BBO# 660707)

Appendix 1

Statement of John J. Hefferren

I am a Professor of Pharmaceutical Chemistry (Ph.D.) and for the last fifty years have been involved in research pharmaceuticals.

I was presented as an expert, in the physical characteristics and identification of pharmaceuticals by the Eli Lilly Company. I was the author of the seminal publication guide on the identification of drugs in the 1950s and 1960s. See Hefferren, Identification Guide for Solid Dosage Forms, JAMA, vol. 162, No. 12, which is attached to Defendant Eli Lilly's Motion for Summary Judgment, filed on October 27, 2006, as Exhibit 5.

My curriculum vitae is attached as Appendix A.

I. BACKROUND OF GUIDE

The JAMA Guide and the research leading up to it became a reference for poison control centers, police and fire departments, pharmacies and airlines as aide in the investigation emergency situations where people became ill or attempted suicide and the question arose: "What was the medication found near them at discovery to assist physicians in emergency treatment of those overdoses, i.e., poison control and pharmaceutical?"

The research performed in order to write the guide included the collection of thousands of tablets and capsules during my tenure at the American Medical Association in creating a comprehensive chart developing a flow system of categories which lead to the identification of the particular substance in order to take proper immediate action.

My initial research includes all of the major sources of information describing drugs, including the Physician's Desk Reference, Goodman & Gillman, United States Pharmacopeia, Red Book and Blue Book. Because of my guide, the Physician's Desk Reference and other

publications began to include pictures and drawings of products that were distinctive and easier for people to differentiate.

As a staff member of the American Medical Association Council on Pharmacy and Chemistry, I was familiar with the physical characteristics of the solid dosage drugs in common use in the 1950s and 1960s in the United States, as to their pharmaceutical type, i.e., tablet, soft and hard gelatin capsules, physical size, outside and inside colors, uniformity and shading of color, markings and imprintings. In my evaluation and classification of over 5,000 various drugs, diethylstilbestrol was included, although I had no particular interest at that time in that drug.

II. CURRENT INVESTIGATION

In the winter of 2006, I conducted an investigation into the question of whether a 25mg diethylstilbestrol tablet as identified by Alberta Jean Mikel-Steffen (see Appendix B), in the attached photo, I examined actual Lilly 25 mg tablets and concluded that the subject tablet was made by Eli Lilly. Approaching this investigation from multiple directions, each direction resulted with Lilly's. My report of investigation is attached as Appendix C & D.

The quarter score with the deep bevel on the inside quarter scoring and the perimeter beveling is a very distinct tablet that would be difficult to formulate and manufacture. My identification guide confirmed this conclusion that the tablet pictured in the photograph was manufactured by Lilly to a very high level of confidence.

I state under penalty of perjury that the above statement is true and correct and based on my own personal knowledge. Executed this 10th day of November, 2006.

John J. Hefferren

Witnessed by: _____
TILO POTH

3030 Campfire Drive
Lawrence, KS 66049

Exhibit A

JOHN J. HEFFERREN

Personal:
Born August 12, 1928, Chicago, Illinois
Married February 6, 1965, Sandra Ann Mancewicz, MS Spectroscopy, MBA Finance
Children – Anne W., Aileen C., Neal R. and Clare J. Hefferren

Education:
Loyola University, Chicago B.S. 1950 Chemistry, Mathematics/Physics
University of Wisconsin M.S. 1952 Pharmaceutical Chemistry, Biochemistry
University of Wisconsin Ph.D. 1954 Pharmaceutical Chemistry, Biochemistry

Professional Experience:
1987-Present - President, Odontex, Inc., Lawrence, Kansas
1987-Present – Research Professor, Center for Biomedical Research, Higuchi Biosciences Center, University of Kansas
1990-2000 Adjunct Professor, Dept. of Community Dentistry, University of Texas Health Science Center, San Antonio, Texas
1985-1987 Research Professor, Oral Biology, School of Dentistry, Northwestern University, Chicago, IL
1977-1986 Director, Research Institute, American Dental Association Health Foundation, Chicago, Illinois
1975-1987 Coordinator, Preventive Dentistry, School of Dentistry, Northwestern University, Chicago, Illinois
1973-1983 Lecturer, College of Pharmacy, University of Michigan, Ann Arbor, Michigan

1969-1987 Consultant in Biochemistry, Veterans Administration Lakeside Medical Center, Chicago, Illinois
1965-1978 Associate, Department of Biochemistry, Medical & Dental Schools, Northwestern University, Chicago, Illinois
1965-1977 Director, Division of Biochemistry, Research Institute, American Dental Association, Chicago, Illinois
1959-1977 Director, Division of Chemistry, Council in Dental Therapeutics, American Dental Association, Chicago, Illinois
1954-1959 Chemist, American Medical Association, Chicago, Illinois

Activities in China:
National Academy of Science - Consultant to Expert Panel to develop health care programs for China
Peking University - Guest Professor, Peking University
Consultant - Preventive Medicine Program Development, Health Science Center, Peking University
Consultant - Preventive Pharmaceutics, Department of Pharmaceutical Sciences Health Science Center, Peking University
Executive Committee, Oral Care Laboratory, College of Chemistry and Molecular Engineering, Peking University

Professional Societies:

Academy of Periodontology
American Association for Advancement of Science
American Association for Dental Research
American Association of Dental Schools
American Association of Pharmaceutical Scientists
American Chemical Society
American Dental Association
European Organization for Caries Research
European College of Gerodontolgy
Federation dentaire Internationale
International Association for Dental Research

Honors and Awards:
Outstanding Researcher and Educator Award, 2002 – American Veterinary Dental Association
Fellow of American Foundation for Pharmaceutical Education, 1950-1953
Nominated to Institute of Medicine, 1986

Honorary Societies: Lambda Chi Sigma, Phi Sigma, Rho Chi, and Sigma Xi

Academic/Research Training and Preceptor Activities:
Co-preceptor for 1 doctorate student with Dr. Sam Kruckenberg at Kansas State University
Co-preceptor for 14 doctorate students with Dr. William Higuchi at University of Michigan
Preceptor for 15 graduate thesis projects, Northwestern University
Preceptor for more than 45 undergraduate students considering dental and research career
American Dental Association Research Institute
Post doctorate training program for scientists learning methodology to assess oral care agents, American Dental Association Research Institute.
Visiting Lecturer for American Association for Colleges of Pharmacy

Scientific Review and Site Visit Inspection/Review Activities:
American Dental Association
American Pharmaceutical Association
Federal Trade Commission
Food and Drug Administration
National Institute for Dental Research
United States Department of Agriculture
Veterans Administration Fellowship and Training Programs
World Health Organization, Commission on Dental Products

Editorial Board:

Journal of Clinical Dentistry

Journal Review:
Journal of American Dental Association
Journal of Clinical Dentistry
Journal of Dental Research
American Journal of Dentistry
International Pharmacopoeia
National Formulary
United States Pharmacopoeia

General Consultancy:
American Society for Testing and Materials (ASTM)
Qualified as Expert Witness - Dentifrice and Toothbrush Assessment Methodology
Southern District of New York Court, March 1999

Consultant to Professional Organizations:
American Journal of Orthodontics
Federation dentaire Internationale – Dentifrice Function Committee
International Food Information Council
National Board of Dental Examiners

National Formulary
Advisory Committee for the National Formulary Service for the American Society of Hospital
Pharmacists
Veterans Administration Merit Review Board
Veterans Administration Research and Education Training Committee for Dentistry
Veterans Administration Advisory Committee for Dentistry
Veterinary Oral Health Council
World Health Organization

Consultant – Private Sector Organizations, historical list:
Church & Dwight, Inc, Princeton, NJ.
Colgate Palmolive Company, Piscataway, NJ
The Gillette Company, Boston, MA
Henkel Company, Düsseldorf, Germany
Hills Pet Nutrition Company, Topeka, KS
Oral-B Laboratories, Boston, MA
Sabri Dental Enterprises, Inc., Downers Grove, IL
Teledyne WaterPik, Fort Collins, CO
Wenger Manufacturing Co., Sabetha, KS

Patents:
United States Patent # 5,296,209, March 22, 1994, Pet Chew Product Having Oral Care Properties, Alexander J. Simone, John J. Hefferren, Michael S. Hand, Gordon Huber

United State Patent # 5,407,661, April 18, 1995, Pet Chew Product Having Oral Care Properties, Alexander J. Simone, John J. Hefferren, Michael S. Hand, Gordon Huber

United States Patent # 5,431,927, July 11, 1995, Pet Food Product Having Oral Care Properties, Michael S. Hand, John J. Hefferren, Brian Marlow, Lon D. Lewis

Exhibit B

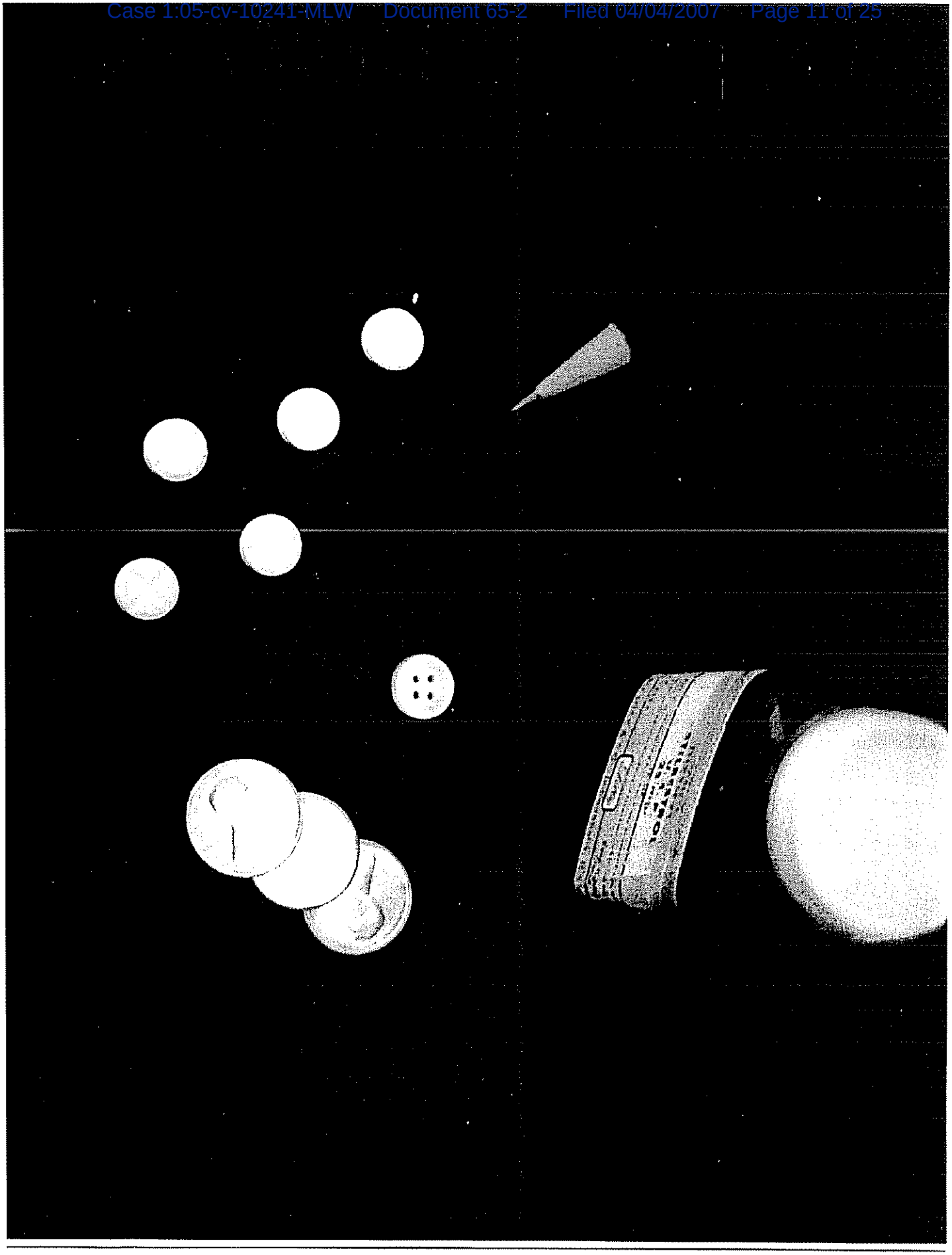

Exhibit C

Considerations in defining the identification of 25 mg. tablet, Diethylstilbesterol, Eli Lilly Company

- **AMA Drug Identification Guide Terminology** to describe the characteristics of Eli Lilly tablet are:
  1- tablet, 1- uncoated, 3- round, 3- flat with bevel, 1- solid coloring,
  1- white color, 1- unmarked, 1- single inside color, 1- white inside color,
  3- scored-¼ to give the Term 11331-11113

  dimensions 9.6, 3.5, 2.6 mm.

- **Tablets with ¼-scoring among the more than 5,000 products** included in the AMA Drug Identification Guide were:
  - 38 Drug products listed in the Guide had ¼-scoring with an assortment of physical characteristics that might aid in the tablet identification – **1**#### - ####**3**, first and last Guide numbers were **1**- tablet and **3**- ¼ scored
    - 5 of the 38 with ¼-scoring had the same characteristics 11331 – 14113 but the tablets had an identifying company symbol indicated by the "4" in the 7th digit position. These products would be easily identified by this company symbol.
    - 8 of the 38 with ¼-scoring had the same characteristics 11331 – 11113, but these tablets did not have a distinguishing symbol, marking or color that would aid in the identification.

Drug (mg)	Firm Code	Company	Tablet Dimensions (mm)
DI – Amphetamine sulfate 10.0, AM 46		American Pharm. Co.	10.5, 3.3, 2.7
Thiamine 50.0	AB 11	Abbott Labs	10.5, 3.4, 3.0
Amphetamine Sulfate 10.0	PR 22	Premo Pharm. Labs	10.4, 3.2, 2.7
Protalba-R no dosage	PI 60	Pitman Moore	10.4, 2.8, 2.0
Triko Tablets #2 no dosage	BR 74	Bryant Pharm. Corp	10.4, 3.2, 2.9
Amphetamine Sulfate 10.0	BR74	Bryant Pharm Corp	10.3, 3.6, 3.2
Diethylstilbestrol 25.0	LI 27	Eli Lilly & Co.	9.6, 3.5, 2.6
Rabellon no dosage	ME 52E	Merck, Sharp & Dohme	8.0, 2.5, 1.7

Tablet Dimensions:
The tablet diameter is the first dimension of the three tablet dimensions and the least variable for the diameter is determined by the diameter of the tablet press die. The tablet depth at the middle of the tablet and at the outside bevel is determined the amount and characteristics of tablet powder and the load set on the tableting press. Although pharmaceutical manufacturing minimizes this variability, for this variance influences the amount of drug in each table. The outside dimension of the table is fixed by the die diameter much as the inside diameter of a gun fixes the diameter of the bullet.

The diameter of the Diethylstilbesterol tablet of Eli Lilly & Company is distinctively different from the other seven tablets with the AMA Drug Identification Guide Term 11331-11113, thus the die used in different from the other dies used to produce tablets with the same AMA Guide Terminology number.

Another ¼-scored, round flat Eli Lilly & Co. Tablet

- Sandril, 5 mg. Eli Lilly & Co.
  - Uncoated, round, flat with bevel, outside and inside brown colors, ¼ scored tablet with line name (11331 – 45143)
  - Tablet dimensions in mm –
    - Sandril 9.6, 2.7, 1.8; Diethylstilbesterol 9.6, 3.5, 2.6

None of the other thirty-eight ¼-scored tablets listed in the AMA Drug Identification Guide had a tablet diameter of 9.6 mm indicating that the Eli Lilly & Company was using the 9.6 mm diameter die for ¼-scored flat with bevel tablets.

The Sandril and diethylstilbesterol tablets have the same first five AMA Drug Identification Guide numbers 11331, but the second five numbers for Sandril were 45143 to indicate brown inside and outside color as well as the line name, "Disket".

The 9.6 mm diameter tablet die has been used often for preparing tablets. The AMA Drug Identification Guide lists 230 drug products of the more than 5,000 drug products having this tablet diameter.

Photographic Comparison of Diethylstilbesterol Products Available

The characteristics of Eli Lilly & Company 25 mg ¼-scored diethylstilbesterol tablets were compared with photographs of 250 diethylstilbesterol tablets available in the late 1950's and early 1960's using the AMA Drug Identification Guide Terminology to help with the identification process.

# of Tablets	ID#	Characteristics
1	171	¼-scored, hexagonal with no bevel
2	56, 130	½-scored, round flat
2	135, 171	hexagonal with ½ and ¼ scoring (non-round tablets)
3	69, 79, 213	symbols
91		sugar coated tablets that are usually colored
123		colored tablets that are either sugar coated or uncoated

Preliminary Inspection Sheet, 8-10-59
for Tablets No. 1724 Diethylstilbesterol, U.S.P. 25 mg

The top and side view schematics 3/8" die for the ¼-scored tablets show the deep ¼-scoring that is described

Upper punch – varied depth bevel, **deep** cross scored
Lower punch – varied depth bevel

This description of the die, punches and tablet for Tablets No. 1724 Diethylstilbesterol, U.S.P. 25 mg.is identical to the Terminology in the AMA Drug Identification Guide for the 25 mg. diethylstilbesterol tablet of Eli Lilly & Co. that was an uncoated, round, flat with bevel and ¼-scoring tablet.

Summary of Photographic Comparison of Diethylstilbesterol Tablets:

- There were no tablets in this 250 photographic collection of diethylstilbesterol tablets that visually matched the AMA drug Identification Guide Terminology for Eli Lilly & Company 25 mg, ¼ scored uncoated, white, round, flat, unmarked tablet.
- There was one ¼ scored tablet, but the shape was hexagonal.
- The combination of the drug, round-flat shape with deep ¼-scoring made the Eli Lilly tablet unique amongst this photographic collection of tablets.

Human Visual Identification of Diethylstilbesterol:

- The human eyes provide a simple, elegant stereo visual image of tablets that provide definition of color, shape and distinctive characteristics.
- The small, round, flat shape is unusual amongst diethylstilbesterol tablets (2 in 250)
- Adding the additional ¼-scoring makes the Eli Lilly 25 mg diethylstilbesterol tablet unique amongst those 250 tablets of diethylstilbesterol.
- A woman taking 25 mg.diethylstilbesterol tablets of Eli Lilly daily will select this tablet from a group of diethylstilbesterol and other tablets.

Tablet Verification:

- The AMA Drug Identification Guide established the identity of the Eli Lilly 25 mg. diethylstilbesterol tablets with its Terminology 11331-11113 and dimensions of 9.6, 3.5, 1.7 mm.

Exhibit D

August 1, 2006

Summary from Hefferren Perspective:

7/26/06

- Sought to match Lilly quarter scored tablets from bottle with ~150 diethylstilbesterol product photos obtained from Lilly.
  - With Lilly as source of photos, there was a question to its completeness.
  - Photos did not include Lilly quarter scored or Squibb product.
  - Each photo was treated as an unknown and the tablet characteristics put into 10 digit AMA Drug Identification Guide Term
    - None of the tablets included in the photos matched the Lilly quarter scored tablet
    - Simple tabulation of the tablets in the ~150 photos was terminated mid-afternoon to insure catching the last flight from SouthWest flight from Baltimore to Kansas City
- Travel time to Kansas was used to describe the interaction of formulation, manufacture, drug and dosage to define the parameters of the tablet or capsule used to deliver the drug.
  - Premise – the quarter scored, Lilly tablet of diethylstilbesterol was not marked with a Lilly symbol or name, but the tablet parameters including the deep quarter scoring made it distinctive.

8/1/06

Spent the day at University Missouri Dental School Library working with the AMA Drug Identification Guide for Solid Dosage Forms

Goals:

- Become more familiar with the specifics of the Guide that I developed in the late 1950's.
- Select Guide parameters and characteristics that might be helpful to Aaron Levine in the development of his presentation
- Locate comments and critiques of the Guide published in the Journal of the American Medical Association and referenced in JAMA, because any negative comments could be used again the Levine case.
- Try to find Lilly quarter tablet and other quarter scored tablets in the AMA Guide
  - Detail the information provided in the AMA Guide about quarter scored tablets and their manufacturers.
    - This search was partially completed today and could be made more complete should Aaron Levine desire to have this done.

JAMA Letter and Clinical Notes with some relevance to AMA Guide

- Letters - Identification of Medications JAMA 184:10, 183-184, 1963
  - Poisoning of 100,000-200,000 children each year by household medications and need for identification
- Clinical Notes – Caldwell et. al. JAMA 187:12, 951-953, 1964

- Medical students given the Guide and unknown tablets to identified. Results were mixed. White unmarked tablets were the most difficult to identify.

AMA Drug Identification Guide – Text portion of the Guide and its relevance

Page 1146 pp2 – added factors that influence and supplement gathered information to aid in the identification, e.g., disease, drug and dosage schedule, e.g. quarter scored = 4 doses

Page 1146 pp6 – scope

Page 1148 pp3 – limitations

" pp4 - side shape & coating

Page 1150 pp8 Widdifield Guide to Symbols & Imprints (Built upon recognized and established systems thus enhancing the scientific stature of the publication. Used Munsel system and Carl Foss for color definition and red Book listing of manufacturers.

Figure 3. Thickness of a tablet varies, but not the diameter that is defined by the die walls, ballistic mentality.

Figure 4. Of 2171 unknown tablets, all but 150 were successively defined by the Guide. After the 10 digit term of the Guide, physical size and other parameters must be used for further identification. The number of identification tools will depend upon the skill set of the user.

Page 1152 pp2 – drugs and dose determine table size

" pp3 – tablet variation in size

" pp3 – human eye is a stereo camera that can visualize three dementions so tablet curvature is easy for the eye to detect. Biconvex (Squibb) vs flat (Lilly) tablets

Search of the AMA Guide for All Quarter Scored Tablets among the 5,000 products listed in the Guide. Guide is an objective collection of tablets available in the late 1950's and early 1960's.

11331-11113 Tablets with these physical characteristics included in AMA Guide.

1.- Tablet
1 - uncoated (Type of coating0
1 - round (Top view)
3 - flat c bevel (Side view)
1 – solid (Type of coloring)

1 – white (Outside color)
1 – unmarked (Markings)
1 - one (number of inside colors)
1 – white (inside color)
3 – Scoring (1/4 scoring)

Page 1221, page 177, Drug Product Listing for 11331-11113 Term Tablets

DI – Amphetamine sulfate 10.0, AM 46	10.5, 3.3, 2.7 mm	color - white	Imprint H-1
Thiamine 50.0 AB 11,	10.5, 3.4, 3.0 "	"	"
Amphetamine Sulfate 10.0 PR 22	10.4, 3.2, 2.7 "	"	"
Protalba-R no dosage PI 60	10.4, 2.8, 2.0 "	"	"
Triko Tablets #2 no dosage BR 74	10.4, 3.2, 2.9 "	"	"
Amphetamine Sulfate 10.0 BR74	10.3, 3.6, 3.2 "	"	"
Diethylstilbestrol 25.0 LI 27	9.6, 3.5, 2.6 "	"	"
Rabellon no dosage ME 52E	8.0, 2.5, 1.7 "	"	"

Companies:
AM 46 – American Pharmaceutical Co.
AB 11- Abbott Laboratories
PR 22 – Premo Pharmaceutical Labs, Inc.
PI 60 – Pitman Moore
BR 74 – Bryant Pharm. Corp.
LI 27 – Eli Lilly & Co.
ME 52E – Merch, Sharpe & Dohme

Summary of size dimensions of these tablets:

- Six of the tablets were made with a 10.3-10.5 diameter tabletting die
  - Thickness at center and bevel depend upon particle size, loading of press and pressure applied, so these differences are characteristic of the formulation and can vary a little, but always less than diameter
- Two of the dies, 9.6 and 8.0 diameters are very difference dies.

11341-11113 (1)tablet, (1)uncoated, (3)round, (4)flat without bevel, (1)solid coloring – (1)white - outside coloring, (1) unmarked, one inside color, (1) white inside color, (3) ¼ scoring There were no tablets with this set of physical characteristics that have the same round flat shape, but without any bevel such nitroglycerin tablets.

Term numbers of ¼ scored tablets with various sets of physical characteristics

Term #	# of tablets	Drug/Company	Distinctions from white usual
11311-14113	1	Acylanid SA 45	Flat/Biconvex & Speckled
11311-54153	1	Acylanid SA 45	Red, marked, inside-red
11321-11113	1	Delomets DU42	Biconvex
11321-12113	3	Elkosin Cl 10 Elipten Cl 10 Stilbetin SQ 11	Biconvex, Firm -marked
11321- 13113	1	Antabuse AY 11	Biconvex, Initials-marked
11321-54153	1	Rubramin SQ 11	Biconvex, Red, Symbol, red
11331-11113	8	See previous page – characteristics similar	
11331-12113	2	Medomin GE 15 Sintrom GE 15	Firm -marked
11331-14113	5	Belladenal SA 45 Phenergan WY 14 Invesine HCl ME 52E Liquamar OR 17 Cogentin ME 52E	Symbol - marked
11331-15113	1	Provell Maleate LI 27 Line name - marked	
11331-21123	1	Triko Tablets #1 BR 74	Gray outside and inside
11331-41143	1	Prulose WA 57	Brown outside and inside
11331-45143	1	Sandril LI 27	Brown outside and inside, Line name
11331-51153	1	Triko Tabs #3 BR 74	Red outside and inside
11331-52153	1	Kynex LE 21	Red outside and inside, Firm name
11331-71173	1	Midicel PA 47K	Yellow outside and inside

11331-72173	2	Madribon RO 32 Yellow outside and inside, Apresoline CI 10
11331-82183	1	Gantanol RO 32 Green outside and inside, Firm name
11331-84183	2	Altafur 250, EA 35G Green outside and inside, Symbol Altafur 50, EA 35G
11331-91193	1	Protalba PI 60 Blue outside and inside,
11334-64263	1	Belladonal LE 21 Speckled, orange outside and inside
11334-74273	1	Bellergal SA 45 Speckled, yellow outside & inside, Symbol

Companies:
SA 45 – Sandoz Pharmaceutical Div. Sandoz, Inc.
DU 42 – S. F Durst & Co.
CI 10 – Ciba Pharmaceutical Co.
SQ 11 – E.R. Squibb & Sons
AY 11 – Ayerst Labs., American Home Products Corp.
GE 15 – Geigy Paharmaceuticals, Div. of Geigy Co. Inc.
WY 14 – Wyeth Labs., American Home Products Corp.
ME 52E – Merch Sharpe & Dohme, Div. of Merck
OR 17 – Organon, Inc.
LI 27 - Eli Lilly & Co.
BR 74 – Bryant Pharm. Corp.
LE 21 – Lederle Labs., American Cyanamide Co.
PA 47K – Parke Davis & Co.
RO 32 – Roche Labs, Div. Hoffman-La Roche , Inc.
EA 35G – Eaton Labs.
PI 60 – Pitman-Moore & Co.

11331-45143 Sandril, 5 mg. Brown outside and inside, Line name, ¼ scored 9.6, 2.7, 1.8 mm LI 27 Eli & Company

11331-11113, Diethylstilbestrol 25.0 mg. uncoated, white, round, flat with bevel, white inside, ¼ scored 9.6, 3.5, 2.6 mm LI 27 Eli & Company

July 25, 2006

To: Aaron Levine

From: John Hefferren

Subject: Background on the Development of the AMA Drug Identification Guide

Why:and So What
The modest laboratories at the American Medical Association in Chicago were being remodeled, so Hefferren decided to use this absence of laboratory resources to develop a simple identification aid for Poison Control Centers as well as local and national police agencies. These agencies had frequent needs to identify unknown drugs produced in the typical, unmarked, white tablets as well as soft and hard gelatin capsules solid dosage forms available in the late 1950's and 1960's. The era of distinctive markings and the need for same was yet to occur.

As it became clear that even the most common unmarked, round, biconvex, white, uncoated tablet could be identified based upon the physical characteristics, the Guide was extended to include simple sensory tests like odor and taste. Then the Guide was complemented with simple qualitative and quantitative test methods such a ultraviolet and infrared spectra. The physical characteristics were then extended with micro examination of the compressed tablet much as ballistics study match the bullet and gun. On one side the study of tablet led to a better understanding of the wear occurring on die used in tableting machines to compress formulations into tablets with the compromise between desired shipping durability and disintegration of the tablet in the gastrointestinal tract.

DES Production and Marketing Considerations

- Two major dosage ranges with multiple dose levels within each dosage range
- **Enteric Coating of tablets**
    - Many DES tablets were coated with shellac to prevent dissolution in the acidic environment of the stomach.
    - This shellac was then coated with multiple layers of uncolored and then colored carbohydrate mixture to convert the uncoated round, bicoinvex table to a smooth rounded colored coated tablet.
- Multiple dose levels led to several SKUs and individual table dose sizes. If the same table size is used then there is the risk of mixing and confusing the concentration of the active ingredient in tablets with concentrations but the same physical size and perhaps color.
- In the later years this led to multiple colors of coates tablets as well as differences in size.
    - In the DES specimen population, a wide range of coated tablets were red with little distinction between brands and dosage.

- To resolve this situation, major manufacturers began introducing distinctive characteristics to provide identity exclusivity and reduce the number of SKus or table doses.
    - With the lower doses of DES, scoring the uncoated tablets provided an apparent easy route to providing two or more tablet sections in the same tablet. For example, a tablet scored in half could be broken in half or taken without scoring to provide two dose levels.
        - The most convenient approach to this solution was to simply score the traditional, round biconvex tablet. The die manufacturers were comfortable with this shape and adding the scoring ridge was a small change.
        - Scoring a biconvex tablet into four equal segments was much more difficult from a die manufacturing perspective and much more difficult to produce satisfactory tablets that could be broken into four equal segments.
            - The desire for 4 equal segments led to the use of flat rather than biconvex tablets.
            - Wide beveled scoring of the tablet became necessary so that the ratio of the total thickness to the tablet thickness at the bottom of the cross needed to be minimized.
            - These die, compression and patient considerations led to few quarter scored tablets being produced.
        - From the formulating perspective, the balance between a tablet that withstood the rigors of shipping and could be demonstrated to disintegrating within the gastrointestinal track became a major challenge.

Summary of decisions and compromises necessary to produce a scored tablet

- Need for fewer SKUs or tablet sizes
- Scored tablet
    - More difficult to produce
    - More difficult to maintain intact
        - during shipping and use of a bottle of tablets
        - simple solution is to make the table physically harder
    - Then a physically harder will be more difficult to achieve disintegration and subsequent dissolution within the gastrointestinal tract.
        - Physically harder tablets resist breakage
        - Physically harder tablets are more difficult for patient to break
- Making scored tablets is not for amateurs and those with limited resources and experienced

July 27, 2006

To: Aaron Levine

From: John Hefferren

Subject: Examples of various solid dosage forms with relevance to round, flat, quarter scored tablets.

Soft gelatin capsules with heat seal at junction:

- Vitamin E 400 IU
- Nattokinase
- Liprinex

Hard Gelatin capsules

- Saccharomyces boulardi

Pan coated uncoated tablets – usually multiple layers of sugar solution and acid 0 resistant layer like varnish

- Demazin – blue tablets with Schering Emblem

Uncoated, round, flat, half scored, pink tablets -25 mg hydrochlorthiazide, Vintage Pharmaceutics, Charlotte, NC. Easy to break at score, but the very small tablet is easy to drop and then hard to find. Very small tablets like these are not patient friendly.

Uncoated, rectangular, biconvex, half scored, yellow tablets – Glucosamine/Chrondontin Sulfate for joints. Rounded score is often hard to break, but rectangular shape helps breaking.

Uncoated, elliptical biconvex, speckled yellow, half score tablets made by the same manufacture of the House brand of Costco. Note the similarity in tablets from same contract manufacturer.

Thin film-coated, round biconvex, un-scored tablets – Costco House brand made to look and respond like Bayer Aspirin®

Thin film-coated, round biconvex, un-scored marked, red tablets of Ibuprofen – coating is protect the stomach from the drug

Compressed, dissolution resistant, elliptical, half scored white tablets – Astra Zeneca. These tablets are very hard to break even with deep score because the formulation is self adhesive in nature to retard dissolutions. It dissolves slowly, but frustrates the patient who has been told to break in half.

Uncoated, rectangular, marked, white tablets - Throxine 5mg. tablets for my dog who is now dead. Deep score combined with shape and thickness make tablet easy to break at score mark.

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

JULIE DELANEY and WILLIAM P. DELANEY Plaintiffs, v. ELI LILLY AND COMPANY, Defendant.	Civil Action No. 05-CV-10241 (MLW) Next Action: Motions Hearing on April 19, 2007 at 1:30 p.m.

(PROPOSED) ORDER

UPON CONSIDERATION of Plaintiffs' Motion for Leave to File the Additional Affidavit of John J. Hefferren in Opposition to Defendant's Motion for Summary Judgment, and any Opposition thereto, and for good cause shown, it is this ____ day of _____, 2007,

ORDERED that Plaintiffs' motion be GRANTED and the Affidavit of John J. Hefferren made part of the record in opposition to Defendant's Motion for Summary Judgment and all associated Motions to Strike.

_____
The Honorable Mark L. Wolf
United States District Judge